



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,023	10/10/2001	Dennis R. Kling	RAK-001.02	7890

25181 7590 11/20/2002

FOLEY HOAG, LLP
PATENT GROUP, WORLD TRADE CENTER WEST
155 SEAPORT BLVD
BOSTON, MA 02110

EXAMINER

PHAM, HOAI V

ART UNIT PAPER NUMBER

2814

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/974,023

Applicant(s)

KLING ET AL.

Examiner

Hoai V Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 and 21-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 21-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The amendment filed 1/8/02 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the decoupling capacitor 14 may be connected in parallel with the power plane 28 and the ground plane 29.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The phrase "wherein said decoupling capacitor connects in parallel between said power and ground planes" is not described in the specification and not shown in the figures by the original disclosure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 12, 21, 23, 30 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al. [JP. 406,295,981A].

Takashi et al. (figure 1, and the abstract) discloses a device for interconnecting a plurality of circuit devices, comprising:

a support base (16) having a first surface;
a decoupling capacitor (24) mounted on the first surface; and
an interconnect layer having a pattern of circuit connections (18) and being formed over the decoupling capacitor, whereby the decoupling capacitor is embedded within the interconnect layer,

and whereby the pattern of circuit connections of the interconnect layer is coupled to the decoupling capacitor and a circuit device (13) mounted on a surface of the interconnection layer opposite the first surface of the support base.

Takashi et al. only shows a portion of the integrate circuit having the circuit device (13) mounted on the surface of the interconnection layer (18) but Takashi et al. fails to show a plurality of circuit devices mounted on the surface of the interconnection layer. However, it would have been obvious to the skilled in the art to have a plurality of circuit devices mounted on the surface of the interconnection layer since it has been held that mere duplication of the essential working parts of the device involves only routine skill in the art. See *St. Regis Paper Co. V. Bemis Co.*, 193 USPQ 8. Therefore, it would have been obvious to the skilled in the art to have a plurality of circuit devices mounted on the surface of the interconnection layer in an integrated circuit for different application.

With respect to claim 21, Takashi et al. does not mention that the circuit connections include a signal plane, a power plane and a ground plane. However, Takashi et al. shows the same structure of applicant invention. Therefore, it is inherent to one skilled in the art to recognize that the decoupling capacitor should have the signal plane, the power plane and the ground plane in order to provide power or signal to operate the device.

With respect to claim 23, Takashi et al. discloses that the support base comprises a silicon containing substrate (16).

With respect to claim 30, Takashi et al. does not show that a plurality of capacitors mounted on the first surface. . However, it would have been obvious to the skilled in the art to have plurality of capacitors mounted on the first surface since it has been held that mere duplication of the essential working parts of the device involves only routine skill in the art. See *St. Regis Paper Co. V. Bemis Co.*, 193 USPQ 8. Therefore, it would have been obvious to the skilled in the art to have plurality of capacitors mounted on the first surface for different required of different application.

With respect to claim 32, Takashi et al. discloses that the circuit device (13) is in electrical communication with the decoupling capacitor (fig. 1).

With respect to claim 33, Takashi et al. does not mention that the decoupling capacitor includes a pair of pads and the pattern of circuit connections includes a ground plane and a power plane, wherein one pad is coupled to the ground plane and the other pad is coupled to the power plane. However, Takashi et al. shows the same structure of applicant invention. Therefore, it is inherent to one skilled in the art to recognize that the decoupling capacitor includes a pair of pads and the pattern of circuit connections includes a ground plane and a power plane in order to one pad is coupled to the ground plane and the other pad is coupled to the power plane.

7. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al. [JP. 406295981A] in view of Tuckerman [U.S. Pat. 5,274,270].

With respect to claims 24 and 27, Takashi et al. does not mention that the decoupling capacitor comprises a silicon containing dielectric material or silicon base. However, Tuckerman shows that the decoupling capacitor comprises a silicon

Art Unit: 2814

containing dielectric material or silicon base (48) to improve the pinhole-free properties of capacitor dielectric and improve electrical performance (col. 4, lines 36-43).

Therefore, it would have been obvious to the skilled in the art to use the silicon containing dielectric material or silicon base for the decoupling capacitor dielectric as taught by Tuckerman in the device of Takashi et al. to improve the pinhole-free properties of capacitor dielectric and improve electrical performance.

With respect to claims 25 and 26, Takashi et al. does not mention that the interconnecting layer comprises of aluminum or copper. However, Tuckerman shows that the interconnecting layer (76, 77) comprises of aluminum or copper (col. 6, lines 4-13). Therefore, it would have been obvious to the skilled in the art to use the aluminum or copper as taught by Tuckerman in the device of Takashi et al. to form the interconnecting layer since such material is a good conductor.

8. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al. [JP. 406295981A] in view of Smith [U.S. Pat. 4,890,192].

Takashi et al. does not mention the decoupling capacitor having a capacitance of 50 nf/cm^2 . However, Smith shows the decoupling capacitor having a capacitance of 50 nf/cm^2 (col. 1, lines 8-10). Therefore, it would have been obvious to the skilled in the art to form the decoupling capacitor having the capacitance of 50 nf/cm^2 as taught by Smith in the device of Takashi et al. since such capacitance is well known for use in high performance electronic devices as taught by Smith.

9. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al. [JP. 406295981A] in view of Eichelberger [U.S. Pat. 5,841,193].

Takashi et al. does not show that at least one resistor mount on the first surface. However, Eichelberger shows that a resistor chip (102) (col. 8, lines 55-57). Therefore, Therefore, it would have been obvious to the skilled in the art to have at least one resistor mount on the first surface as taught by Eichelberger in the device of Takashi et al. for use in a filter system and to reduce noise.

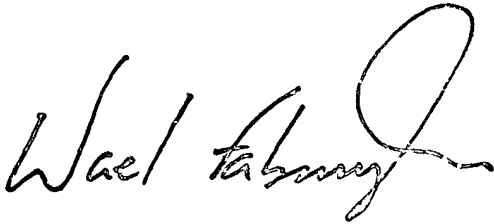
Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

12. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP
Hoai Pham
November 13, 2002


SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2000